

SCIENCE STRUCTURAL QUESTIONS ANSWERS

TOPIC 1

HUMAN BODY

1. Reproduction
2. Penis, urethra, glands, sperm duct, epididymis, testes, scrotum
3. (a) Female reproductive system
(b) Right ovary, cervix, vagina, uterus, and oviduct
4. Sexual reproduction
5. Gametes
6. Sperms
7. Ova
8. (a) An ovum (b) Sperm cell
9. Fertilization
10. Oviduct (fallopian tube)
11. One
12. A zygote
13. An embryo
14. Implantation
15. Uterus (womb)
16. Placenta
17. Food, oxygen
18. Umbilical cord
19. - Allow movement of food and oxygen to the foetus
- Allow movement of waste materials from foetus to the mother.
20. Amniotic sac
21. Protects the foetus from shock and accidental injuries.
22. 9 months.
23. Labour.
24. (i) Contraction of the wall of the uterus.
(ii) Dilation of the cervix.
(iii) Breaking of the amniotic sac.
(iv) Amniotic fluid flows out.
(v) Baby comes out with head first.
(vi) Tying and cutting of umbilical cord.
(vii) Coming out of afterbirth.
25. Prevent bleeding from the baby.
26. Placenta and remains of umbilical cord.
27. Removal of waste products from the body.
28. Lungs, skin, kidneys.
- 29.

Excretory organ	Excretory wastes
Kidneys	Urea, excess water
Lungs	Carbon dioxide, water vapour
Skin	Excess salts, excess water

30. A. Right kidney
B. Ureter
C. Urinary bladder
D. Left kidney
E. Renal vein

TOPIC 2:

PLANTS

1. Mechanisms that make a plant survive in its habitat.
2. - Wet areas
- Dry areas
- Normal conditions
3. Xerophytes.
4. Hydrophytes.
5. Mesophytes.
6. Cactus, euphorbia, aloe vera, murrum grass, baobab

9. - They have deep roots.
- They shed leaves during dry season.
- They have needle-like leaves.
- They have fleshy stems.
10. Deciduous plants.
11. Jacaranda.
12. - High temperatures.
- Wind
- Number of stomata
13. Succulents.
14. Cactus, euphorbia.
15. Thorns.
16. - Large leaves.
- Leaves have many stomata.
- Leaves have thin cuticle.
17. - Stunted growth.
- Wilting.
- Discolouration of leaves.
- Curling of leaves.
18. - They lower crop yields.
- They lower quality of produce.
- They increase cost of production.

TOPIC 3

HEALTH EDUCATION

1. HIV
2. Semen, Vaginal fluid, blood, saliva.
3. - Blood transfusion.
- Sharing body piercing tools.
- Sexual intercourse.
- Mother to child during breast feeding.
4. - Shaking hands.
- Hugging.
- Playing together.
5. Window, incubation, symptomatic, full blown
6. Giving people education about HIV and AIDS to prevent spread of the disease.
7. - Educating masses.
- Using media.
- Creating public awareness.
8. Educating a large group of people.
9. Radio, television and newspapers.
10. - Market places
- Funeral services
- Chief's baraza
- Church services
11. Sexually Transmitted Infections
12. Gonorrhoea, syphilis, chancroid and genital herpes.
13. (a) Gonorrhoea - Bacteria
(b) Syphilis - Bacteria
(c) Chancroid - Bacteria
(d) Genital herpes - Virus
14. - Abstaining from sex.
- Married people being faithful.
- Seeking medical help.
- Avoiding drug abuse.

TOPIC 4:

WEATHER AND ASTRONOMY

1. Clouds, Sun
2. Clouds, Moon, Stars

SCIENCE STRUCTURAL QUESTIONS ANSWERS

4. 28
5. Phases of the moon
6. Sun.
7. (a) Crescent moon (b) Quarter moon
(c) New moon (d) Full moon
8. Nimbus, cumulus, stratus, cirrus
9. (a) Nimbus
 - They are dark grey in colour.
 - They are low clouds and indicate heavy rains.(b) Cumulus
 - They look like cotton wool.
 - They are white in colour and have flat bases.
10. Cumulus
11. Stratus
12. Cirrus
13. Daily changes of a place for a short period of time.
14. Meteorologists.
15. Weather station.
16. Rain gauge, wind vane, anemometer, windsock, thermometer
17. Name the weather instruments that
 - (i) Measure Temperature – thermometer
 - (ii) Measure Speed of wind – Anemometer
 - (iii) Show the direction of wind – Wind vane
 - (iv) Measure humidity – Hygrometer
 - (v) Measure atmospheric pressure – Barometer
 - (vi) Measure strength of wind – Windsock
 - (vii) Measure amount of rainfall – Rain gauge
18. (a) Prevent water from splashing in to the funnel.
(b) Prevent evaporation of collected water.
19. Where wind is blowing from.
20. (a) Liquids expand on heating and contract on cooling.
(b) Air expands on heating and contracts on cooling.
21. (a) Liquid thermometer.
(b) Wrong labelling of the scale.
22. Sun, 9 planets, moons, comets, asteroids, meteors.
23. The sun
24. Venus.
25. Mercury
26. Saturn.
27. Mercury
28. Venus
29. Jupiter.
30. Mercury.

TOPIC 5

ANIMALS

1. Adaptations
2. Feed and move
3. Omnivores, carnivores and herbivores
4. Herbivores
5. Carnivores
6. Omnivores
7. Incisors, canines, premolars and molars.
8. Holding, cutting and chewing food.
9. A diastema.
10. Catching and killing its prey
11. Carnassial teeth
12. Beak and feet
13. Nectar, fish, flesh and grains.
14. (a) Nectar (b) Fish (c) flesh
15. - Look for food
- Look for a mate.
- Escape danger.
- Look for good habitat.
16. Swimming, hopping, walking, crawling

- Slippery bodies
 - Presence of fins
19. Swim bladder
 20. (a) Forward movement and braking.
(b) Straight movement (prevent rolling)
(c) Upward and downward movement in water
 21. Powerful hind legs
 22. - Streamlined body
- Presence of wings
 23. - Stunted growth
- Low products
- Rough coat
- Decrease in weight
 24. - Decrease in production
- Death

TOPIC 6

ENVIRONMENT

1. Surrounding of a living things.
2. Biotic
3. Abiotic
4. - Plants, animals, soil, water, air.
5. Plants and animals.
6. Soil, water and air.
7. Air
8. Making something harmful to animals and plants.
9. - Oil spillage
- Plastics
- Industrial wastes
- Farm chemicals
10. Fertilizers, pesticides and herbicides
11. - Death of living organisms in the soil.
- Destruction of soil structure.
- Plastic interfering with growth of roots.
- Oil spillage interfering with air circulation.
12. - Farmers reduce the use of inorganic fertilizers.
- Proper disposal of plastics.
13. Proper use and care of the soil.
14. - Building of terraces and gabions.
- Afforestation
- Mulching and cover cropping.
- Contour farming.
15. - Cigarette smoking
- Industrial waste gases
- Aerosol sprays
- Vehicle exhaust fumes
16. Carbon dioxide and sulphur dioxide.
17. - Cigarette smoking leads to lung cancer.
- Cigarette smoking can lead to death (carbon monoxide)
- Destruction of iron sheets by acid rain.
- Destruction of ozone layer.
18. - Banning smoking in public places.
- Proper maintenance of vehicle engines.
- The use of unleaded fuel.
- Treatment of industrial waste gases.

TOPIC 7

SOIL

1. Water, air, animals, humus.
2. (a) Air (b) Humus (c) Water
3. Clay, loam and sand
4. - Poor drainage
- Highest capillarity

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5. - Highest drainage
- Lowest capillarity
- Rough texture
- Lowest water retention
6. Sand, clay and humus.
7. Roughness or smoothness of a soil.
8. Rate at which water passes through a soil.
9. - Equal amounts of different soils.
- Equal sizes of funnels.
- Equal amounts of cotton wool.
- Equal amounts of water.
- 3 glass bottles.
10. Size of soil particles.
11. Sandy soil
12. Clay soil
13. Water retention
14. Clay
15. Capillarity
16. - Water
- Three identical tubes
- Equal amounts of soils
- Equal amounts of cotton wool
17. Clay
18. Sand
19. Carrying away the top fertile soil
20. Wind and water
21. Slopy land, bare soil, type of soil
22. Splash, rill, gully and sheet
23. (a) Gully erosion (b) Splash erosion
24. Ability of a soil to produce high crop yields for a long period of time.
25. Soil erosion, leaching, poor methods of farming.
26. Fertilizers
27. Organic fertilizers and inorganic fertilizers.
28. Fertilizers made from chemicals.
29. Compost, farm yard, green manure and organic mulches.
30. Straight fertilizers.
31. Nitrogenous, phosphoric and potassic.
32. - They do not pollute the soil.
- They do not burn crops.
33. - They take long to decompose.
- They are bulky.
34. - They are easy to transport.
- They contain high plant nutrients
- They are needed in small amounts
35. - They burn crops.
- They are expensive.

TOPIC 8

WATER

1. Cooking, drinking, washing
2. Watering animals, irrigation, cleaning tools
3. Swimming, surfing and boat racing
4. Cleaning raw materials, cooling machines
5. Using pots, dams and tanks
6. Water borne diseases
7. Bilharzia, cholera, typhoid
8. - Violet diarrhoea
- Vomiting
- Dehydration
- Abdominal pains
9. - Fever
- Pain in joints and muscles
- Vomiting
- Abdominal pain

- Blood in urine and stool
11. - Boiling and treating drinking water.
- Proper sanitation.
- Washing hands after visiting latrine.
- Covering food.
12. Making water harmful to plants and animals.
13. - Sewage
- Farm chemicals
- Industrial wastes
14. Plants, animals and soil.
15. - Death of aquatic animals.
- Destruction of iron sheets.
- Reduction of HEP production.
- Spread of waterborne diseases.
16. - Reusing water
- Harvesting water
- Recycling water
- Using water sparingly.
17. Water that contains calcium and magnesium salts.
18. Water that contains little or no calcium and magnesium salts.
19. Scum
20. Foam
21. Soft
22. - Hard water wastes soap
- Hard water stains clothes
- Hard water makes clothes lose their brightness
23. Hard water is good for drinking.
24. Softening hard water.
25. Boiling
26. Magadi soda

TOPIC 9

FOOD AND NUTRITION

1. - Give us energy
- Build the body
- Protect us from diseases
2. - Energy giving foods
- Body building foods
- Protective foods
3. (a) Ugali, rice, yams
(b) Meat, eggs, beans
(c) Spinach, orange, kales
4. A meal that contains all the three basic food groups.
5. - Ugali, meat and cabbage.
- Rice, bean stew and kales
- Chapati, green grams and orange juice
6. - These are diseases caused by not eating a balanced diet.
7. - Kwashiorkor - Rickets
- Marasmus - Scurvy
- Anaemia - Beriberi
8. - Kwashiorkor - Lack of proteins
- Marasmus - Lack of enough food
- Rickets - Lack of vitamin D
- Scurvy - Lack of vitamin C
- Night blindness - Lack of vitamin A
9. (a) - Kwashiorkor
- Pot belly
- Brown hair
- Swollen limbs and arms
(b) - Marasmus
- Visible bones under the skin
- Crying all the time
- A child looks like an old woman or man
10. - Helps in digestion

SCIENCE STRUCTURAL QUESTIONS ANSWERS

11. Roughage
12. Keeping food safely away from micro organisms to prevent it from going bad.
13. Drying, smoking, salting and use of honey
14. Salting
15. Drying
16. Ash
17. Canning, refrigeration and freezing
18. - Infants
- Lactating mothers
- Expectant mothers
- People with HIV and AIDS
19. A child between 0 years to 2 years
20. - First milk called colostrum has antibodies which boost the immunity of the baby.
- Breast milk bonds the baby and the mother
- Breast milk is easy to digest.
- Breast milk is a balanced meal for a baby.
21. Introducing new foods to a baby to supplement breast milk.
22. Calcium and phosphorus.
23. Protective foods (vitamins)
24. Fats and oils
25. Illness of the stomach caused by eating contaminated food.
26. Chemicals and micro organisms.
27. Insecticides, detergents and kerosene
28. Bacteria, yeast and mould
29. - Violent diarrhoea
- Vomiting
- Abdominal pain
30. - Preheating food before eating.
- Avoid eating contaminated food.
- Covering food.
- Avoid eating expired food.

TOPIC 10

PROPERTIES OF MATTER

1. Anything that occupies space and has weight.
2. Solid, liquid and gas.
3. (a) Solids - Have a definite shape.
- Have a definite volume.
- Have a definite mass.
(b) Liquids - Have a definite volume.
- Have no definite shape.
- Have a definite mass.
(c) Gases - Have definite mass
- Have no definite shape.
- Have no definite volume.
4. (a) Air exerts pressure
(b) Air occupies space
(c) Air has weight
5. Depth.
6. Surface area.
7. Material, Shape, Weight and Density
8. Temperature and pressure
9. (a) Freezing, Condensation, Evaporation, Melting
(b) 1 and 2.
(c) 3 and 4.
10. Process where a solid changes direct to a gas.
11. Air
12. Nitrogen, Oxygen, Rare gases and Carbon dioxide
13. (i) 0.97%
(ii) 21%
(iii) 0.03%

- (b) Rare gases and nitrogen
- (c) Nitrogen and oxygen
15. - Respiration in plants and animals.
- Used in germination.
- Used in burning
16. (a) Oxygen is used in burning.
(b) - Candle went out after some time.
- Water entered the glass.
- Level of water in the basin dropped.
17. - Making fire extinguishers.
- Used in photosynthesis.
- Preserving soft drinks.
18. - Nitrogen
19. (a) Used in hot air balloons.
(b) Used in making electric bulbs.
(c) Used in making coloured bulbs/tubes.
20. Solutes.
21. Insoluble.
22. Solvent.
23. A solute + a solvent = A solution
24. (a) Salt – Salt solution
(b) Glucose – Glucose solution
(c) Sugar – Sugar solution
25. Miscible liquids.
26. Immiscible liquids.
27. (i) Picking
(ii) Winnowing
(iii) Use of a magnet
(iv) Sieving
(v) Filtration
(vi) Decantation
(vii) Distillation
28. To absorb colour.
29. Materials that a magnet attracts.
30. Materials that a magnet cannot attract.

TOPIC 11

ENERGY

1. Energy is the ability to do work.
2. Light, sound, heat, electricity
3. Heat and light.
4. - Photosynthesis
- Photography
- Seeing
5. - Using natural sources e.g. sun
- Using artificial sources e.g. lamps and electricity
6. - Avoid accidents in the house
- Keep away pests such as rats
- To see clearly in the house
7. - Travels in a straight line
- Travels in all directions
8. (a) Reflection – Bouncing of light
(b) Refraction – Bending of light
(c) Dispersion – Splitting of light into seven colours
9. Materials that do not allow light to pass through them.
10. Translucent.
11. Transparent materials.
12. Sound
13. Pitch.
14. - Length of wire
- Tightness of a wire
- Thickness of a wire
15. Loudness or softness of a sound.
16. Echo
17. Irregular sound

SCIENCE STRUCTURAL QUESTIONS ANSWERS

19. - Heat makes a substance to change state.
- Heat increases temperature of a substance.
- Heat makes substances expand.
20. (a) Solids – Conduction
(b) Water – Convection
(c) Gases – Convection
(d) Vacuum – Radiation
21. - Static electricity
- Current electricity
22. Rubbed.
23. They repel.
24. Electrons flow.
25. - Dry cells
- Hydroelectric power
- Solar panel
- Diesel/petrol generators
26. A circuit.
27. Complete the circuit.
28. - Electric iron box
- Electric heater
- Fan
- Electric cooker
29. - Never insert objects in the sockets.
- Never overload circuits.
- Never play near electric mains.
- Never touch switches with wet hands.
30. - Avoid open places when it is raining.
- Never shelter under trees when it is raining.
- Never carry sharp pointed objects when it is raining.
31. When one form of energy changes to another form.
32. (a) Chemical → Heat → Kinetic
(b) Chemical → Electrical → Heat light
(c) Chemical → Electrical → Magnetism
33. Chemical → Kinetic
34. Sound → Electromagnetic → Electrical → Sound
35. Mechanical energy.
36. Proper use and care of sources of energy.
37. - Using energy sparingly.
- Using energy efficient devices.
- Using renewable sources of energy.
38. - Using vehicles with well maintained engines.
- Sharing transport.
- Using bicycle
39. Sources of energy that never get finished.
40. (i) Plants (ii) Solar (iii) Wind (iv) Water
41. Solar heater, solar panel, solar cooker, solar drier.
42. Sources of energy that can get finished.
43. Coal and petrol
44. A – Clay lining
B – Metal casing
C – Door
D – Handle
45. - It uses less charcoal.
- It conserves heat.
- It does not require shaking as charcoal burns.

TOPIC 12

MAKING WORK EASIER

1. Machines
2. - They reduce the effort.
- They change direction of force.
- They increase speed of doing work.
3. Levers, pulleys, inclined planes
4. (a) Trimming the fence

5. (a) Rake (b) Fork Jembe (c) Bottle opener
6. - Avoid accidents
- Prevent tools from rusting
- Increase their efficiency
7. - Cleaning them after use.
- Oiling to prevent rusting.
- Sharpening when blunt.
- Repairing broken handles.
8. Quantity in an object.
9. Kilograms or grams.
10. Beam balance.
11. Standard weights.
12. - Y shaped tree trunk.
- A panga
- A long strong pole
13. - Paul should sit away from the pivot.
- James should sit near the pivot.
14. Motion is movement.
15. Force
16. Force.
17. Newtons.
18. Spring balance
19. Weight, Friction, Magnetic force.
20. Force the earth exerts on objects pulling them towards its centre.
21. Inertia is the tendency of an object to remain in its position moving or stationary.
22. Coin, hard paper, glass.
23. Friction is a force that opposes motion.
24. - Friction enables us to light a match stick.
- Friction enables us to walk.
- Friction enables us to write.
- Friction enables a car to brake.
25. - Friction causes tear and wear of machines.
- Friction hinders work.
- Friction produces unwanted heat.
- Friction causes blisters to occur on our hands when digging.
26. - Using ball bearings.
- Applying lubricants.
- Making surfaces smooth.
27. - Making surfaces rough.
- Applying adhesives between surfaces.
- First class levers
- Second class levers
- Third class levers

29.

First class levers	Second class levers	Third class levers
Claw hammer	Wheelbarrow	Charcoal tongs
Lid opener	Nut cracker	Fishing rods
See saw	Door hinges	Human arm

30. An inclined plane makes work easier by increasing the effort distance.
31. - Ladder
- Staircase
- Ramp
- Road winding up a hill
32. Wedges.
33. (a) D
(b) A
(c) None
34. A single fixed pulley.
35. A flag post
36. a groove
37. - It changes direction of force.